FARMING FOR THE FUTURE

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ON-FARM DEMONSTRATION PROGRAM

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FARMING FOR THE FUTURE
ON-FARM DEMONSTRATION PROGRAM
SUMMARIES OF FINAL REPORTS

Research Division
Alberta Agriculture
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FARMING FOR THE FUTURE
ON-FARM DEMONSTRATION PROGRAM
PROJECT SUMMARIES

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ON-FARM DEMONSTRATION PROGRAM
PROJECT SUMMARIES

The On-Farm Demonstration Program was established in 1982 by the Agricultural Research Council of Alberta as a part of Farming for the Future. It is allocated funds through the Alberta Heritage Savings Trust Fund.

Farming for the Future's objectives are to help improve the long-term viability of Alberta's agricultural industry, and to help improve net farm income in Alberta. As part of Farming for the Future, the On-Farm Demonstration Program aims at intensifying and accelerating the transfer of new technology to producers.

The project summaries in this document are derived from reports submitted to Farming for the Future for projects completed to date under the program. The opinions expressed in these summaries are those of the persons conducting the projects. They do not necessarily represent the opinions of Farming for the Future or of Alberta Agriculture.

Copies of the project reports are available from Alberta Agriculture's Research Division. To obtain technical details for an individual project please contact the project co-ordinator whose address is given at the end of the project summary.

CEREALS AND OILSEEDS

Project Number: 82-F002-1

Project Title: Wheat and Barley Varietal Trials (Stubble)

Co-operating Producer: Ronald Smith

Location: northeast of Nanton, NE 30-16-27-W4

Project Co-ordinators: Barbara Bennett, (former) District Agriculturist, Claresholm (1984) and Allen Toly, (former) District Agriculturist, Claresholm (1982, 1983)

Objective: to compare wheat and barley varieties in the M.D. of Willow Creek with respect to yield, height and relative maturity.

Abstract:

The wheat varieties grown were Wakooma durum, Wascana durum, Neepawa, Park and Columbus. The barley varieties were Bonanza, Galt, Betzes, Johnston, Klages, Hector and Elrose. Columbus and Bonanza were grown in 1983 and 1984 only.

1984 was a severely dry year and the yields were below those of previous years.

The top four yielding varieties in both the two-year averages (1982 and 1983) and three-year averages ('82,'83 and '84) were Bonanza, Galt, Johnston and Hector. The two-year average yields in bushels per acre of these top four were: Bonanza, 79.9; Galt, 67.1; Johnston, 58.9; and Hector, 57.9. The three-year average changed results slightly with Park (28.3) outyielding Neepawa (28) and Columbus (20.4).

The trial also gave an indication of relative maturity.

Subject: Cereals and Oilseeds

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 40, Claresholm, Alberta, T0L 0T0; Phone: 625-3301

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F003-1

Project Title: Wheat and Barley Varietal Trials on Summerfallow

Co-operating Producer: Marvin Vandervalk

Location: south east of Claresholm, NE 5-12-25-W4

Project Co-ordinators: Barbara Bennett, (former) District Agriculturist, Claresholm (1984) and Allen Toly, (former) District Agriculturist, Claresholm (1982, 1983)

Objective: to compare five spring and durum wheat varieties and six barley varieties grown on fallow land with respect to yield, height and relative maturity.

Abstract:

The wheat varieties grown were Wakooma durum, Wascana durum, Neepawa, Park and Columbus. The barley varieties were Bonanza, Galt, Betzes, Johnston, Klags, Hector and Elrose. Columbus and Bonanza were grown in '83 and '84 only.

1984 was a severely dry year and the yields were below those of previous years.

Both the two-year (1982 and 1983) and three-year (1982, 1983 and 1984) averages showed Galt yielding highest (78.4 and 60.7 bu/ac respectively). In the two-year average Betzes (66.1) ranked second, Johnston and Bonanza (65.2) equal and Hector (61.9) as fourth. The three-year average ranked Hector (52.5), Betzed (52.3) and Johnston (51.3) following Galt.

The average of 1982 and 1983 showed Wakooma (54.5) outyielding Wascana (45). Both the two-year and three-year averages of spring wheat varieties showed Neepawa (42.7 and 37), Park (33.7 and 28.3) and Columbus (24.7 in 1983 only and 25.5 in 1983 and 1984) in that order.

The trial also gave an indication of relative maturity

Subject: Cereals and Oilseeds

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 40, Claresholm, Alberta, T0L 0T0; Phone: 625-3301

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F005-2

Project Title: Evaluation of Spring-Seeded Norstar Winter Wheat as a Summer Pasture

Co-operating Producer: Peter Hok

Location: 15 miles south of Cereal

Project Co-ordinator: John Ruschkowski, District Agriculturist, Oyen

Objective: to compare spring-seeded Norstar winter wheat with fall rye with respect to carrying capacity, durability, palatability and economics.

Abstract:

On light brown soil receiving less than ten inches of precipitation per year, spring-seeded Norstar winter wheat will not significantly outyield fall rye. It can withstand greater grazing pressure than fall rye and will remain palatable throughout the initial growing season.

For use as a summer pasture, winter wheat should be seeded at a rate of at least 2.5 bushels per acre, as early as possible in the season. Fertilization can significantly increase yield.

Spring-seeded winter wheat cannot be harvested mechanically in the establishment year.

Subject: Cereals and Oilseeds

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Box 120, Oyen, Alberta, T0J 2J0; Phone: 664-3899

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F022-5

Project Title: P.C.W. Agra-Tech Seed Treatment

Co-operating Producer: Voris Molsberry

Location: Leduc

Project Co-ordinator: Janette McDonald Adam, District Agriculturist, Leduc

Objective: to evaluate the effectiveness impregnating large quantities of seed with water and then artificially drying the seed for immediate seeding; and to assess the effects of this treatment on rate of emergence, percent emergence, days to maturity and yield of Neepawa wheat.

Abstract:

Plant counts in May indicated that the treated seed did not emerge any faster than untreated seed. Due to problems in getting the moist, treated seed through the drill, the application rate for the treated seed was unclear and so it was impossible to assess percent emergence.

Project team felt that there was no effect on days to maturity. There was a slight increase in yield from the treated plots but it was insufficient to pay for the $10/bushel treating charge.

The co-operating producer is not interested in treating any more seed until the process is improved and the benefits proven.

Further testing is necessary to determine the advantages and payback on the investment.

Subject: Cereals and Oilseeds

For Further Information Contact:

District Agriculturist, Alberta Agriculture, County Building, P.O. Box 248, Leduc, Alberta, T9E 2Y1; Phone: 986-2251

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

CROP PROTECTION / APICULTURE

Project Number: 82-F005-1

Project Title: Blackbird Control in Sunflowers

Co-operating Producer: Tom Droog

Location: south of Bow Island, NE 18-9-11-4

Project Co-ordinator: Dave Cubbon, District Agriculturist, Bow Island

Objective: to attempt to control blackbirds through the use of bird scaring devices.

Abstract:

Three types of bird scaring devices were placed in a field where potential for bird damage was apparent. A hand pistol was also used to fire noise cartridges on a random schedule. As a result, bird damage was light in the trial field. It was also found that: equipment must be placed on time and in a proper location; alarms should be placed above the crop; and random or unscheduled shotgun or handgun patrols are essential.

Subject: Crop Protection/Apiculture

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Bldg., Box 867, Bow Island, Alberta, T0K 0G0; Phone: 545-2233

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F005-6

Project Title: Assessing the Value of Propane Guns in Protecting Spring Bee Yards from Bear Damage

Co-operating Producers: Gerard Paradis and Jean Paradis

Locations: Guy and Girouxville (bee yards in Smoky River Valley M.D.)

Project Co-ordinator: Donald MacDonald, Supervisor of Apiculture, Falher

Objective: to determine the value of propane scare cannons in preventing bear damage to bee yards.

Abstract:

Eight non-fenced bee yards were equipped with scare devices. Bear damage at these sites was compared with damage to other apiaries without the devices but in the same area.

Propane scare devices appeared effective in repelling bears from the vicinity of apiary sites. The devices are limited in use to remote areas far from human habitation due to the noise factor. A more reliable scare device must be found that will fire at thirty-minute intervals, thus reducing costs of propane and travel.

Subject: Crop Protection/Apiculture

For Further Information Contact:

Donald MacDonald, Supervisor of Apiculture, Alberta Agriculture, P.O. Box 415, Falher, Alberta, T0H 1M0; Phone: 837-2252

District Agriculturist, Alberta Agriculture, P.O. Box 90, Falher, Alberta, T0H 1M0; Phone: 837-2211

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F013-6

Project Title: Effect of Shelter Size on Alfalfa Pollination with Leafcutting Bees

Co-operating Producer: Robert Gartly

Locations: Eaglesham, Rycroft, Sunny Valley, Three Creeks

Project Co-ordinator: Fred Potrebenko, District Agriculturist, Eaglesham, and Dr. Daphne Fairey, Agriculture Canada Research Station, Beaverlodge

Objective: to determine whether two, four or eight acres of alfalfa can be pollinated by leafcutting bees from a single shelter for increased ease of operation through large, economic populations of bees.

Abstract:

For successful alfalfa seed production the use of an insect pollinator, the leafcutting bee, is mandatory. In a number of alfalfa seed producing areas in southern latitudes leafcutting bees from one shelter pollinate up to eight or ten acres. Most pollination operations in the Peace River Region use bees from one shelter to pollinate only one to two acres. Because pollination of large acreages from one shelter could save both time and labor for producers operating large populations of bees, a study on the use of large shelters in the region was conducted in the 1983 (Year 1) and 1984 (Year 2) growing seasons.

In Year 1, four alfalfa seed producers at Eaglesham, Rycroft, Sunny Valley and Three Creeks conducted a study on the use of single shelters of appropriate sizes to pollinate two, four, and eight acres of alfalfa. In Year 2, three producers at Eaglesham, Rycroft and Three Creeks participated in the study. From the presently available data, it appears that it may be possible to use large shelters to pollinate areas in excess of two acres from a single shelter. Shelters to house bees for pollination of up to four acres were relatively easy to construct and handle. Shelters for pollination of eight acres were cumbersome to construct and keep upright in the field. However, additional information on leafcutting bee yields and alfalfa seed yields is required to make recommendations for shelter sizes in the region.

Subject: Crop Protection/Apiculture; Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, P.O. Box 270, Eaglesham, Alberta, T0H 1H0; Phone: 359-3828

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

ENGINEERING

Project Number: 83-F006-2

Project Title: Solar Battery Charger Evaluation

Co-operating Producer: Charles W. Rosenau

Location: near Youngstown

Project Co-ordinator: John Ruschkowski, District Agriculturist, Oyen

Objective: to evaluate the function of a solar collector designed to maintain the charge on batteries operating an electric fence.

Abstract:

The Savory Grazing System under investigation in Alberta requires a large expenditure in fences. To help lower the cost, electric fences are suggested as an effective fencing system. A Gallagher solar powered electric fencer, model SP 5, was purchased from Gallagher's Distributing Company in Owen Sound, Ontario. It was evaluated as an alternative to the conventional 12-volt battery powered fences in common use.

The fencer was operated on a quarter-section pasture from mid-June until the end of November, 1983. During the daylight hours, the fencer operates from the solar cell which produces an 18-volt spark. During the evening, two rechargable six-volt batteries connected in series operate the fencer in a manner similar to conventional electric fencers. No insulators are required.

The fencer worked well during the entire evaluation period except for a modulator which malfunctioned after a lightning storm. The modulator was promptly replaced under warranty.

The fencer worked well in rain, snow and hail. It is relatively durable and would be satisfactory as an alternative to conventional electric fencers in a Savory Grazing System.

The fencer costs approximately $900 in comparison to a conventional fencer at $150-$200 (with battery). The cost may eliminate a solar fencer as an alternative since most conventional fencers will work well at one-sixth the price.

Subject: Engineering

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Box 120, Oyen, Alberta, T0J 2J0; Phone: 664-3899

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F004-4

Project Title: Comparison of Smooth Wire Suspension Fencing with Standard Barbed Wire Fencing

Co-operating Producer: Douglas S. Millar

Location: St. Paul

Project Co-ordinator: Kirsty Ross, District Agriculturist, St. Paul

Objective: to compare five-strand smooth wire suspension fencing, four-strand barbed wire fencing and barbed wire suspension fencing.

Abstract:

Three types of fencing were constructed and evaluated on their effectiveness to hold cattle. Smooth wire suspension fencing, barbed wire suspension fencing and conventional barbed wire fencing were constructed so they produced about fifty acre pastures. Both pastures had exposure to all three fence types. Three hundred yearling cattle were then rotationally grazed through the pastures.

No cattle broke through the fencing during the trials. Smooth wire fencing was found to be superior to barbed wire fencing. The smooth wire fencing was easier to handle, easier to maintain and less costly. Once the management of this new wire is fully understood and put into practice, its use will become widespread.

Subject: Engineering

For Further Information Contact:

District Agriculturist, Alberta Agriculture, P.O. Box 188, 5009-50 Avenue, St. Paul, Alberta, T0A 3A0; Phone: 645-6301

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F004-5

Project Title: Solar Heated Air for Grain Drying and Aeration and Building Space Heating

Co-operating Producer: Schwanke Farms Ltd.

Location: SW-17-58-7-W5, Sangudo

Project Co-ordinator: Lloyd Giebelhaus, District Agriculturist, Sangudo

Objective: to enable early harvest through the provision of cheap, efficient grain drying; and to reduce energy costs by using a solar heating mechanism for space heating.

Abstract:

A Melco gambrel style building, 40' X 80', was built with fibreglass panelling covering 1200 square feet of the south side of the buiding. Vertical sheet metal ducts with a painted black surface were mounted between the framing members and connected to a horizontal duct at the bottom that transferred the collector air to the grain aeration fan discharging into the grain bin. The solar collector and collection duct cost about $9,000.00.

Thermocouples were installed inside and outside the collector to measure temperature differentials across the collector and input and output temperatures of the fan.

Air leakage in the fan chamber prevented any air from the collector from being used. An attempt to seal the air leaks did result in some air being drawn from the collector and a net daytime temperature rise of 10°C was achieved. The net temperature rise for a 24-hour period due to the collector was estimated to be 1.5°C. This might result in a 7 to 8% reduction in drying time compared to natural air drying.

A totally sealed fan chamber and an adjustable tap on the collector, ensuring proper air circulation through the collector, could certainly improve net drying temperatures.

Subject: Engineering

For Further Information Contact:

District Agriculturist, Alberta Agriculture, County Building, Box 450, Sangudo, Alberta, T0E 2A0; Phone: 785-2266

Research Divison, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F007-5

Project Title: Two Four-Wheel Drive Tractors Hooked in Tandem Using One Operator

Co-operating Producer: Jerry Bauer

Location: Thorhild, SE 27-59-22-W4

Project Co-ordinator: John VanderLeest, District Agriculturist, Thorhild

Objective: to create a method for one person to hook two tractors in tandem for the purpose of pulling extra-long farm implements.

Abstract:

The two tractors handled and turned very well and had no trouble pulling the equipment. Starting and stopping went smoothly and there was no tendency to jackknife at sharp turns.

When the front tractor was not pulling, it was pushed along by the tractor behind it. Steering and handling was no problem as it followed the driver-operated machine wherever it went. Slippage was measured at the front tractor and varied between 10 and 12 percent under partial load and up to 17 percent under full load. One disadvantage of driving the front tractor was that the view of the equipment being pulled was obstructed by the second tractor. This could be overcome by making the necessary changes to the front tractor and bringing everything together in the back machine. The problem then would be obstruction of the forward view by the front tractor. This hookup was not tried out. The changes required to make these tractors work in tandem were minor and it should not take much time for two men to put them together or to separate them again. This was not tried either.

This kind of tractor hookup would work well on large farms but it is of limited use in the Thorhild area where the farms are small and the land is cut up by sloughs and bush.

Subject: Engineering

For Further Information Contact:

District Agriculturist, Alberta Agriculture, County Building, P.O. Box 370, Thorhild, Alberta, T0A 3J0; Phone: 398-3993

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F008-5

Project Title: Chaff Evaluation

Co-operating Producer: Dave Bencharsky

Location: Boyle, SW 14-65-19-W4

Project Co-ordinator: Gary Berger, District Agriculturist, Athabasca

Objective: to evaluate the logistics of machine operations in collecting, transporting and feeding chaff; to evaluate chaff quality from various cereal crops; and to assess cow performance when fed chaff as part of a balanced feed ration.

Abstract:

The chaff vacuum blower is not practical unless modified with a suction arm that is longer, smaller in diameter and flexible. If the chaff vacuum blower were used, the truck box would need a screen top to prevent chaff from blowing out. The fan speed on the chaff blower is too fast for barley and oats, and blows much outside the wagon. Combine time loss under dry field and swath conditions was minimal. Time was lost driving to locations to dump the chaff. Each truck load of chaff had to be left separate; if the loads were piled an excessive amount of snow was mixed in, resulting in heating. Due to the severe August frost the quality of straw and chaff was abnormally high. The cows wintered well on chaff. Chaff from 186 acres of cereal grains had an equivalent feed value of 71 acres of mixed hay in 1982. The chaff saver resulted in fewer weeds and volunteer grain in the feed in the following spring.

Subject: Engineering; Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, P.O. Box 480, Athabasca, Alberta, T0G 0B0; Phone: 675-2252

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F002-6

Project Title: Raised Lambing Crates

Co-operating Producer: L.T. Jones

Location: Fairview

Project Co-ordinator: Nora Paulovich, District Agriculturist, Fairview

Objective: to upgrade lambing management systems through the use of lambing crates to increase lamb survival rates, reduce mis-mothering and reduce the spread of disease.

Abstract:

An elevated (12 inch) stanchion lambing unit comprising 32 stalls was constructed to house ewes lambing during late winter and early spring. A conventional open front shed housed control ewes in a traditional claiming pen system during the 1983 and 1984 lambings.

Natural-serviced and synchronized-serviced ewes lambed in both the control unit (C.U.) and elevated stanchion lambing unit (E.S.L.U.) during both years. Yearling ewes lambing outside were placed in claiming pens in E.S.L.U. or C.U. in 1984. Greater control and isolation in E.S.L.U. reduced the death losses among yearling ewes. E.S.L.U. provided excellent opportunities to move lambs from multiple birth ewes to single birth ewes.

Daytime temperatures in the E.S.L.U. were about 5°C higher than outside temperatures. The center six clear acrylic panels provided better sunlight entrance compared to the ten adjacent 6 ml plastic covered panels. The durability of the acrylic panels compared to annually replaced 6 ml plastic panels may not justify the extra cost of acrylic. Translucent roof panels had no advantage over metal roofing. The E.S.L.U. pile foundation remained firm and should provide many years of use.

Generally, when ewes are restrained and isolated in the lambing stalls, the death loss of newborn lambs is reduced. The stalls are ideally suited to synchronized lambing ewes. Night shift labor is not required when the ewes are in the stalls. The elevated slotted floor reduces the labor required for pen cleaning.

Subject: Engineering; Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Box 819, Fairview, Alberta, T0H 1L0; Phone: 835-2241

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F006-6

Project Title: Hog Barn Heat Exchanger

Co-operating Producer: Stephen Pain

Location: Nampa, SW 19-81-19-W5

Project Co-ordinator: Duane Wood, Regional Agricultural Engineer, Fairview

Objective: to design and build a heat exchanger to capture some of the heat normally lost from a swine feeder barn through ventilation.

Abstract:

A tube heat exchanger was made by a farmer at Nampa and installed in a hog feeder barn. The cost of materials was $1500. Labor took 120 hours. Airflow was 1600 cfm inlet and 2600 cfm exhaust. Efficiency averaged 22 percent varying from 12 percent to 33 percent. Payback was 2 years for materials alone and 3.5 years including labor. The exchanger is equal to or better than commercial units.

Subject: Engineering

For Further Information Contact:

Duane Wood, Regional Agricultural Engineer, Alberta Agriculture, Fairview Regional Office, Provincial Building, Box 7777, Fairview, Alberta, T0H 1L0; Phone: 835-2291

District Agriculturist, Alberta Agriculture, Provincial Building, Bag 900, Box 20, Peace River, Alberta; Phone: 624-6205

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

FORAGES

Project Number: 83-F003-1

Project Title: Demonstration of Cereal Grasses as Irrigated Pastures

Co-operating Producer: Jerry Reti

Location: Taber

Project Co-ordinator: Carole Rex, District Agriculturist, Taber

Objective: to demonstrate that irrigated cereals are an alternative or complement to perennial pastures.

Abstract:

A severe hailstorm destroyed the plots and the remaining material was prone to cause nitrate poisoning. (Annual pastures are more at risk to hail storms than perennial pastures due to the possibility of nitrate buildup.) Therefore the project was terminated.

If the project were to be carried out again i) it should be run on continuous grazing to reduce the labor required to move the electric fence, and ii) it should be run on a larger scale and a permanent fence erected for rotational grazing.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Administration Building, 50 Street and 48 Avenue, Box 640, Taber, Alberta, T0K 2G0; Phone: 223-4471

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F007-1

Project Title: Handling of Corn Stover

Co-operating Producer: Robert L. Laidlaw

Location: Bow Island, 16-11-11-W4

Project Co-ordinator: Dave Cubbon, District Agriculturist, Bow Island

Objective: to determine if removing corn stover from fields and utilizing it as cattle feed would be economical and practical.

Abstract:

Results from the project showed that corn stover could be hauled off fields in an economical way. The feed that resulted was adequate for feeding beef cattle if it was supplemented properly. Using anhydrous ammonia to treat corn stover will work but the cost of this procedure must be examined closely to ensure that it fits into a specific feeding operation.

The removal of the corn stover reduced the cover on the field and so allowed easier spring planting and field working. Also, with the stover removed, soil temperatures warmed up quickly enough to allow the corn plants to get a good start in the spring. Seeding grain corn early is a must, so there is no question that removal of corn stover would be beneficial.

Therefore, it is possible and beneficial to put up corn stover but it is up to each grower to determine how it fits into his operation.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 867, Bow Island, Alberta, T0K 0G0; Phone: 545-2233

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F008-2

Project Title: Fertilizer Rejuvenation of Aged Perennial Forage Stand

Co-operating Producer: Russel Mayberry

Location: Hanna

Project Co-ordinator: Lee Melvill, District Agriculturist, Hanna

Objective: to utilize fall and spring broadcast nitrogen fertilizer on a grass-alfalfa stand.

Abstract:

Fertilizing the stand proved to be uneconomic. Also, the response to the nitrogen fertilizer appeared to be limited by low phosphorus levels.

Subjectively, it appeared that this old and very dense stand would benefit more from breaking and reseeding than from fertilizer applications.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 349, Hanna, Alberta, T0J 1P0; Phone: 854-4451

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F007-2

Project Title: Grazing Annual Forages, Winter Wheat and Triticale

Co-operating Producer: Alastair Robertson

Location: Longview

Project Co-ordinator: Donald Milligan, Regional Livestock Supervisor, Airdrie

Objective: to evaluate the feasibility and potential of using annual forages in a conventional beef management program; and to determine beef gains utilizing annual pasture in the Longview area.

Abstract:

A winter wheat/triticale mix was planted at a seeding rate of 55 lbs/acre of Welsh triticale and Norstar winter wheat, fertilizer rate of 120 lbs/acre of 34-0-0 preplant and 45 lbs/acre 11-51-0 with seeding. Seeding date was May 9 and a double disc drill was used.

Twenty cows, 20 calves and 34 yearling heifers were weighed and turned onto pasture on June 17. It was an unusually dry year and the triticale was totally grazed from the pasture very early on. The winter wheat had a strong basal growth and would have done well with better moisture.

The parcel of land showed good potential for use as alternative pasture.

Subject: Forages

For Further Information Contact:

Donald Milligan, Regional Livestock Supervisor, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

District Agriculturist, Alberta Agriculture, Provincial Building, Box 490, High River, Alberta, T0L 1B0; Phone: 652-3232

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F007-3

Project Title: Buck Lake Fencing Rotational Grazing Experiment

Co-operating Producer: Jerry Holtman

Location: Buck Lake

Project Co-ordinator: Gordon Bacon, District Agriculturist, Rimbey

Objective: to increase stock numbers and lengthen the grazing season through rotational grazing with electrified high tensile smooth steel wire; to assess average grazing and rest periods for paddocks; and to evaluate solar powered electric fences.

Abstract:

Four quarters of pasture on grey wooded soil were cross fenced with two strands of electrified smooth wire to form fourteen paddocks. A center cell connected all paddocks and contained salt, minerals and water.

Results indicate that total beef production in 1983 and 1984 increased significantly over conventional grazing in 1981. A new gate design at the center cell improved the ease with which cattle moved from paddock to paddock. The solar powered electric fencing unit performed well even under cloudy conditions. The average stay in every paddock and the average rest between grazings were recorded for each month.

High stock density for short periods of time have shown further benefit over rotational grazing alone in control of brush encroachment.

A comparison of income and expenses for continuous versus rotational grazing showed the economic benefits of this rotational grazing system.

Subject: Forages; Ruminants

For Further Information:

District Agriculturist, Alberta Agriculture, Box 888, Rimbey, Alberta, T0C 2J0; Phone: 843-2201

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F008-3

Project Title: Tempered Grain for Feedlot Cattle

Co-operating Producer: Murray Stauffer

Location: Eckville

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Specialist, Red Deer and Brian Harris, (former) Regional Livestock Specialist, Red Deer

Objective: to determine the effect that tempering grain with water for short periods of time has on growth rate and feed efficiency in feedlot cattle.

Abstract:

A method of tempering barley by adding water prior to rolling has been developed by researchers to improve weight gains and feed efficiencies. This trial was to compare tempered-rolled and dry-rolled barley in barley silage rations in a commercial feedlot.

Eighty-one Simmental X Hereford yearling steers were used to evaluate the use of tempered-rolled barley in barley silage rations. Steers were randomly assigned to either a tempered-rolled barley or a dry-rolled barley ration. Barley was tempered with water for approximately 12 hours before rolling. Sufficient grain was tempered for a 10-day to 14-day feeding period. Rations were mixed and fed once daily to appetite. Individual weight gains were measured over a 66-day trial period. Weight gains were 3.51 and 3.06 lb/day for steers fed the tempered-rolled and dry-rolled rations, respectively. Feed intakes were 24.2 and 22.2 lb of dry matter (DM) and feed efficiencies were 6.89 and 7.25 lb DM/lb gain for steers fed tempered-rolled and dry-rolled barley, respectively.

It was concluded that barley could be satisfactorily tempered on small commercial feedlots and that tempered-rolled barley tended to give better animal performance than dry-rolled barley.

Subject: Forages; Ruminants

For Further Information Contact:

Regional Livestock Specialist, Alberta Agriculture, Red Deer Regional Office, Provincial Building, 3rd Floor, 4920 - 51 Street, Red Deer, Alberta, T4N 6K8; Phone: 340-5334

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F016-3

Project Title: Ammoniation of Large Round Hay Bales

Co-operating Producer: Roy Munro

Location: NW-26-36-1-W5 (west of Innisfail)

Project Co-ordinator: Ted Darling, District Agriculturist, Innisfail

Objective: to demonstrate the preservation of large round hay bales by the addition of anhydrous ammonia.

Abstract:

Central Alberta's west country is very well suited to the production of forage crops. The rich soils and relatively high rainfall usually ensure yields of three or four tons/acre or more. However, a large portion of this rainfall occurs during the haying season, causing untold losses in forage quality and quantity.

In an attempt to speed up haying operations and improve forage quality, a stack of 36 large round hay bales were covered with 6 ml plastic and injected with anhydrous ammonia (NH_3). Target moisture level for the bales was 35% but due to moisture testing problems, some bales were much wetter. No problems were encountered with the conventional NH_3 wagon used to apply the ammonia to the stack.

The project could be called a qualified success as considerable time was saved during the haying season and most of the treated bales were well preserved. However, the management of the system is critical. Problems with moisture testing and wind damage to the plastic caused significant spoilage. The co-operating producer feels that the concept has promise and he will experiment further on his own.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 700, Innisfail, Alberta, T0M 1A0; Phone: 227-6565

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F006-4

Project Title: Round Bale Silage

Co-operating Producer: Doug Bullock

Location: NW-2-40-5-W4

Project Co-ordinator: Agnes Whiting, District Agriculturist, Provost

Objective: to demonstrate the use of individually bagged round bale silage to maintain the nutritive value of spring rye put up as feed; and to compare the nutritive quality of individually bagged round bale silage to greenfeed.

Abstract:

Forty-six bales of spring rye were put up in bags with the remaining rye handled as greedfeed. Poor quality bags led to severe deterioration of the bales due to mold formation.

It was also found that this method was impractical for large scale use because of the direct cost of individual bags and the conflicting need for labor.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Municipal District Building, P.O. Box 600, Provost, Alberta, T0B 3S0; Phone: 753-2787

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F001-5

Project Title: Grain Feeding Yearlings on Pasture

Co-operating Producer: Keith English

Location: Dapp

Project Co-ordinators: Kenneth J. Lopetinsky, Forage and Specialty Crops Specialist and Rob Hand, Regional Livestock Specialist, Barrhead

Objective: to assess the benefits and disadvantages of limit-feeding grazing (through the use of salt) to pasturing yearlings on well-managed pasture; to evaluate stocking rates of improved pasture; and to evaluate the problems associated with physical layouts of pastures for rotational grazing.

Abstract:

The following points were observed from this study. 1) Renovation of existing pastures by fertilization can be successful if a) there are sufficient desirable plants present and b) careful grazing intensity is applied. 2) Rotational grazing is an effective, minimal labor method of increasing pasture productivity and utilization and animal performance. Cattle move easily from pasture to pasture. 3) During mid-season, abundant high quality forage will produce better yearling gains than steer limit-feeding grain at 1 percent of body weight on poorer quality pasture. 4) The value of feeding grain during the peak pasture growth period is questionable but it may be beneficial if the grass has matured. 5) Salt-limiting grain mixes on pasture are easy to use and the cattle adjust quickly. No digestive problems such as overload or bloat occurred during the summer grazing period. 6) The average stocking rate for the entire grazing period was 0.7 steers per acre. It ranged from 0.63 steers/acre for the pasture-plus-grain group on a native-tame mixture to 0.78 steers/acre on a tame legume-grass mixture for the pasture-only group. At these stocking rates over-grazing occurred on the native pastures and under-utilization occurred on the tame legume-grass pastures. 7) Visual observation on October 7 indicated that the pasture-plus-grain steers were in fleshier condition than the pasture-only group. 8) More data on this type of demonstration project are required since there were many variables affecting performance and results.

Subject: Forages

For Further Information Contact:

Ken Lopetinsky, Forage and Specialty Crops Specialist, Barrhead Regional Office, Alberta Agriculture, Provincial Building, Box 1540, Barrhead, Alberta, T0G 0E0; Phone: 674-8258

Rob Hand, Regional Livestock Specialist, Barrhead Regional Office, Alberta Agriculture, Provincial Building, Box 1540, Barrhead, Alberta, T0G 0E0; Phone: 674-8248

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F005-5

Project Title: Grain Feeding Yearlings in Late Season on Rotationally Grazed Pasture

Co-operating Producer: Keith English

Location: NW-24-6-26-W4, Dapp

Project Co-ordinators: Rob Hand, Regional Livestock Specialist, Barrhead and Ken Lopetinsky, Regional Forage and Specialty Crops Specialist, Barrhead

Objective: to evaluate limit feeding grain by use of salt to pasturing yearlings during the last 60 days of grazing; to assess the development of a more intensive rotational grazing system; and to evaluate stocking rates and dry matter production of tame pastures.

Abstract:

Eight pastures of approximately ten acres each were set up for rotational grazing. Dry matter samples were taken from each pasture. Broadcast seeding of timothy and alsike clover were used to improve the pastures.

On June 9, 80 yearling steers of mixed breeding were placed on the pastures. They were weighed, tagged, implanted with Synovex S and given Bovaid ear tags. Thirty-eight of the steers were injected with Tramisol. The biological type of each steer was recorded and each steer was condition scored to assess the merits of condition score for predicting pasture gain.

On July 18, the steers were randomly divided into 2 groups; each group grazed 4 of the 8 pastures. On August 24, one group was given access to a self feeder. On October 6, the steers were removed from pasture. The steers were weighed on July 18, August 24 and October 6.

The yearling steers gained exceptionally well on pasture. The steers fed grain for the last 43 days on pasture gained less than the pasture-only group. This is thought to be due to difficulties in moving self feeders and to substitution of grain for forage.

In conclusion, rotational grazing is an effective minimal labor method to increase pasture productivity and utilization and to improve animal performance. Broadcast seeding of easily established forage species can improve pasture production. Supplemental grain feeding to yearling steers throughout the season or in late season, does not compete favorably with well managed rotationally grazed pasture systems.

Subject: Forages; Ruminants

For Further Information Contact:

Regional Livestock Specialist, Alberta Agriculture, Barrhead Regional Office, Provincial Building, Box 1540, Barrhead, Alberta, T0G 0E0; Phone: 674-8248

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F006-5

Project Title: Maximizing Returns Through Beef Cattle Utilizing Annual Pastures and Rotational Grazing

Co-operating Producer: Ray Olesky

Locations: S½-20-57-7-W5 and SE-21-57-7-W5, Sangudo

Project Co-ordinator: Lloyd Giebelhaus, District Agriculturist, Sangudo

Objective: to demonstrate the benefits of rotational grazing as a method of maximizing returns.

Abstract:

From June 2 to August 29, 1984, 449 crossbred steers rotationally grazed 14 pastures of about 15 acres each. The pastures consisted of four annual pastures and ten timothy, alfalfa, creeping red fescue pastures. Grass pastures were fertilized twice. Cereal pastures were grazed three times while the grass pastures were grazed four times. Cattle were moved every one and one-half to two days early in the season. The cereal pastures were grazed from July 11 onward.

To avoid excessive trampling, cereals should be grazed every 14 to 16 days or at a height of 15 to 20 inches.

It appears that the near ideal situation would be to graze a certain number of pastures early in the year. Then, in late July, when regrowth slows down and the cattle's demand for forage increases, bring hay fields into the rotation after an early first cut has been taken. This should extend the grazing season considerably. By grazing grass and legume pastures, as opposed to grass and cereal pastures, better grazing and hay control could be maintained resulting in a more efficient use of forage.

Subject: Forages; Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, County Building, Box 450, Sangudo, Alberta, T0E 2A0; Phone: 785-2266

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F025-5

Project Title: Fertility Levels on Corn Silage

Co-operating Producer: Paul Bryant

Location: SE-20-48-25-W4, Leduc

Project Co-ordinator: Janette McDonald Adam, District Agriculturist, Leduc

Objective: to evaluate the effect of higher levels of fertility on corn yields; to conduct a cost/benefit analysis of high levels of fertility; and to conduct yield comparisons between two corn varieties, Pioneer 3995 and Asgrow RX23.

Abstract:

In April the field was divided into high and low fertilizer plots. Fertilizer applications of 500 lbs/acre of 23-0-21 were broadcast on the high fertilizer plot on May 3. Seeding was on May 6.

An application of 125 lbs/acre of 11-55-0 was drilled with the seed on the high fertilizer plots. Fifty lbs/acre of 11-55-0 and 50 lbs/acre of 0-0-60 were drilled with the seed on the low fertilizer plots.

Atrazine was sprayed at a rate of 2½ litres/acre on June 23. The corn plots were weighed and harvested on October 3.

The early maturing varieties did not have a great yield advantage over late maturing varieties. This is probably because no variety was able to reach anywhere near maturity due to dry weather.

The crop never recovered from the dry summer and there was no measurable response to the high fertility levels.

Corn is dependent on a continuous supply of water and the chance of a dry summer makes high fertilizer applications very risky.

Subject: Forages; Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, County Building, P.O. Box 248, Leduc, Alberta, T9E 2Y1; Phone: 986-2251

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F001-6

Project Title: Second Year No-Till Companion Crop in Establishing Forage Seed Crops

Co-operating Producer: W. Peter Harris

Location: S½-14-71-10-W6, Beaverlodge

Project Co-ordinator: Miles Kuryvial, District Agriculturist, Grande Prairie

Objective: to grow a zero tillage barley crop on land underseeded the previous year to a forage seed crop.

Abstract:

It was originally planned to seed 40 acres of barley on underseeded creeping red fescue and 60 acres of barley on underseeded alfalfa. Unfortunately, dry weather in the previous year did not allow proper establishment of the fescue and alfalfa. These fields were ploughed up and the zero tillage trial was transferred to a field with a rejuvenated stand of creeping red fescue.

A further difficulty arose because it was necessary to wait for a zero tillage drill to become available. The drill performed adequately but barley was not seeded until June 8th. Heavy rains over the following five to six weeks adversely affected the barley crop.

The soil in the rejuvenated field had very good tilth due to the fibre in the soil from a fescue stand ploughed down a year earlier. However, because the soil was able to hold a great deal of moisture, the barley drowned when the higher than normal rainfall occurred. The fescue plants were more mature than the barley and thrived on the rain.

Because of the various problems encountered, the technique could not be properly evaluated. The project was not continued for another year because of low spring soil moisture levels and the difficulty in obtaining a zero tillage drill at the optimum seeding time.

Subject: Forages

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, 10320-99 St., Grande Prairie, Alberta, T8V 6J4; Phone: 538-5285

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

LAND USE

Project Number: 82-F001-1

Project Title: Zero Tillage vs Minimum Tillage Trial

Co-operating Producer: B.J. Knott

Location: northeast of Stavely, SW 27-14-27-W4

Project Co-ordinators: Barbara Bennett, District Agriculturist, Claresholm (1984) and Allen Toly, District Agriculturist, Claresholm (1982, 1983)

Objective: to compare zero tillage with minimum tillage using conventional farm equipment.

Abstract:

A 28.4 acre field was divided in two with the westerly 14.2 acres used to demonstrate zero tillage, and the easterly 14.2 acres used to demonstrate minimum tillage. An I.H.C. 150 - 8" spaced hoe drill was used to seed both fields.

The results from this project showed that a commonly used hoe drill, such as the I.H.C. 150 - 8" spaced, can adequately seed into untilled stubble providing the combined straw is spread adequately and sharp openers are maintained under dry conditions.

Yields in the first three years for continuously cropped spring wheat slightly favored minimum tillage, although the difference wasn't significant. In 1984, the zero tillage field outyielded the minimum tillage field, again not significantly.

Longer-term data would be needed to evaluate possible long-term benefits of zero tillage. The dry conditions of 1984 handicapped the crops and yields were approximately half those of the previous three years. Costs were slightly lower for the minimum tillage fields in all four years.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 40, Claresholm, Alberta, T0L 0T0; Phone: 625-3301

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Buiding, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F005-1

Project Title: Crop Fallow and Continuous Cropping Using Zero and Conventional Tillage

Co-operating Producers: Wayne Arrison and Dave Kelly

Location: Bassano

Project Co-ordinator: Gordon Frank, District Agriculturist, Brooks

Objective: to demonstrate the use of zero and minimal tillage in the Bassano area, in a brown soil zone; to monitor and evaluate the economics of zero tillage versus conventional tillage under continuous cropping and crop-fallow systems.

Abstract:

Four test conditions were chosen: zero tillage seeded, conventional tillage seeded, zero tillage fallow and conventional fallow. Fields of 13 acres were divided up into these four conditions. Wheat was used as a crop on the seeded fields and was also the alternate crop on the fallow fields.

A number of conclusions were arrived at from observations: (a) an increase of about six bushels per acre would be needed to offset the added costs of zero tillage continuous cropping compared to conventional tillage continuous cropping; (b) a greater yield increase would be required of the zero tillage on a crop-fallow system; (c) during the initial years of using zero tillage, yields would be lower than conventional tillage; longer-term data are needed to evaluate the long-term benefits of zero tillage; (d) adverse effects of insects, especially grasshoppers, appear to be more severe under a zero tillage system; and (e) continuous cropping with zero tillage appears to have the greatest benefits of the four test conditions in terms of soil conservation.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 788, Brooks, Alberta, T0J 0J0; Phone: 362-5551

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F016-2

Project Title: Evaluation of Moisture Conservation of Shelter Belts

Co-operating Producer: Chinook Applied Research Association (Dave Forrester)

Location: NW-7-33-1-W4, Oyen

Project Co-ordinator: Larry Welsh, Regional Crop Specialist, Airdrie

Objective: to demonstrate and evaluate the potential of shelter belts for increasing snow trap and, consequently, for increasing soil moisture conservation.

Abstract:

In the fall of 1983 soil was sampled in summerfallow fields adjacent to a shelter belt. Snow depth and distance from the shelter belt were measured. In April, soil samples were taken at 12, 75 and 175 ft from the shelter belt. The soil was moist or wet at all three sample sites.

Neepawa wheat was seeded on May 15 and treated with Hoegrass 11 for weed control. No fertilizer was applied.

Ten clips of 30 square feet were taken from the three distances. The results showed very little difference in yield between the 3 strips. The effect of additional moisture trapped by the shelter belt was negated by the additional moisture that was extracted by the shelter belt.

Since this project reflects only one year's results it cannot be considered conclusive.

Subject: Land Use

For Further Information Contact:

Regional Crop Specialist, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F011-2

Project Title: Sweet Clover Incorporation Demonstration Trial

Co-operating Producer: Norman Storch

Location: Hanna, N½ 17-34-13-W4

Project Co-ordinator: Russel Horvey, District Agriculturist, Hanna

Objective: to determine if plowdown of sweet clover would help add trash to the soil and to compare the abilities of the Landall Soil Master and a heavy duty double discer with one row of notched discs to incorporate the clover.

Abstract:

The clover produced very high growth without being stemmy and coarse. At the time of plowdown, it was over thirty inches high and very thick.

Neither machine chopped and incorporated the clover in only one pass. The Soil Master did so in two passes at right angles to each other. The discer required three passes. Trash was buried to six inches with the Soil Master but remained near the surface with the discer.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, New Provincial Building, Box 349, Hanna, Alberta, T0J 1P0; Phone: 854-4451

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F012-5

Project Title: Restructuring Peat Soils

Co-operating Producer: Ross E. Smith

Location: Fawcett

Project Co-ordinator: Rick Bjorge, District Agriculturist, Westlock

Objective: to evaluate mixing an upper peat layer with a lower clay loam layer in order to modify the soil texture and improve the soil tilth. To determine how this restructuring affects the production capabilities of the soil.

Abstract:

In the fall of 1983, three 150' x 2100' plots were set up on a peat field with a clay subsoil. Plot #1 was plowed twice, plot #2 was plowed once and plot #3, the control, was not plowed. A specifically-built deep plow was used for plowing. The three plots were seeded with Otal barley. Fertilizer (8-36-15) at 85# per acre was placed in the seed row. Anhydrous ammonia was also applied at 45# per acre. The plots were also sprayed with Blagal.

Plot results indicate that deep plowing was beneficial, leading to earlier maturity, increased yields, higher bushel weights and a higher grade. Single plowing appeared to mix the peat and clay adequately and there was no advantage to double plowing vs single plowing. The increased yields may be due to: improved tilth and so, a better seed bed and earlier germination; improved heat conductivity resulting in warmer soil temperatures, quicker germination and deeper root development; and improved nutrient combination for better plant growth and maturity.

Conclusions: 1. Mixing of peat and clay layers on suitable shallow peat soils can lead to increased yields. 2. A plow with a greater depth capability would be desirable for plowing most shallow peat soils. 3. Additional experimental work is required on the effectiveness of deep plowing in areas of deeper peat soils. 4. Other techniques which serve to mix peat and clay layers of soil should also be examined.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, P.O. Box 429, Westlock, Alberta, T0G 2L0; Phone: 349-4465

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F020-5

Project Title: Evaluation of Nitrogen Application Levels on Grey Wooded Soils

Co-operating Producer: Earl Lawson

Location: SE-31-48-6-W5, Drayton Valley

Project Co-ordinator: Doug Walkey, District Agriculturist, Drayton Valley

Objective: to demonstrate various applications of nitrogen fertilizers on grey wooded soils for oats and barley.

Abstract:

The experiment followed local farming practices as much as possible. Large scale (greater than one acre) plots were preferred and farm scale equipment was used to give representative data.

The four plots totalling nearly 15 acres were used to demonstrate the effect of moderate and high nitrogen applications to coarse grain crops on less productive soils. Each plot represented a common soil type in the area.

Initially, the plots received a base rate of potassium, phosphorus and sulfur fertilizers. Fertilizer was applied at rates of 25, 50, 100, and 150 pounds of actual N per acre.

The plots were divided and seeded to both Cascade oats and Johnston barley. The area experienced a normal moisture pattern for the early growing season although soil moisture carried over from the year before was low. Hail damage estimated at 19% occurred on June 29. Harvest was completed October 6 after a delay of two weeks due to rain.

The information obtained supports fertilizer use to increase yield and protein production but results were abnormally high due to the weather conditions. The optimum level of fertilizer application for oats was found to be 130 to 140 lbs of N. The barley plots showed optimum yield at rates of 150 lbs of N.

The test year was abnormal due to low rainfall. With normal rainfall, yields would be significantly different. A practical optimum N application given normal rainfall and grain prices is estimated to be about 60 lbs/acre for oats and 80 to 90 lbs/acre for barley.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 30, Drayton Valley, Alberta, T0E 0M0; Phone: 542-5368

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F004-6

Project Title: Zero Tillage vs Minimum Tillage vs Conventional Tillage Trials

Co-operating Producer: Mike Gach

Location: SE-29-81-25-W5, northwest of Nampa

Project Co-ordinator: Ray Maubert, District Agriculturist, Peace River

Objective: to investigate the feasibility of using a zero tillage drill in the Peace River area; and to investigate the yields and economics of using zero tillage vs conventional tillage before seeding.

Abstract:

Farming large acreages where the growing season is short, as in the Peace River Region, requires a large investment in machinery and time. If this investment could be reduced, farming would be more profitable and less risky. The purpose of the zero tillage trials was to assess if it were possible to produce consistent, profitable crop yields while saving time and money.

Results from the project show that the unpredictable weather conditions in the Peace can cause serious problems in seeding and crop emergence. In many areas, moisture conservation is one of the major reasons for reducing tillage. However, on some soils in the Peace River Region, conventional tillage is used to dry out a seed bed sufficiently for proper plant emergence and growth. The reduced capital requirements of zero tillage are not large in comparison to the total capital requirements of a farm. Also, if both conventional and zero tillage are used, then machinery costs are increased. The yields of zero tillage plots were significantly lower than those of the conventional tillage plots.

At present, zero tillage does not appear to be a viable alternative to conventional farming practices in the heavy soil areas of the Peace River Region.

Subject: Land Use

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Bag 900-20, Peace River, Alberta, T0H 2X0; Phone: 624-6205

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F010-6

Project Title: Reclamation Study

Co-operating Producer: Harry Rowney

Location: SW-3-73-7-W6, Sexsmith

Project Co-ordinator: Garry Coy, Regional Soils Specialist, Fairview

Objective: to compare various treatments aimed at improving productivity of black solonetzic soils through increasing soil pH, reducing sodium load, improving soil structure and improving soil tilth; and to examine the economics of these treatments.

Abstract:

A kleskun series soil (black solonetz) was subjected to a variety of treatments in an attempt to reduce the physical and chemical limitations to crop growth in that soil. The experimental design provided an opportunity to examine the effects of: (a) subsoiling alone, (b) limestone addition, (c) subsoiling and limestone addition, and (d) subsoiling and gypsum addition.

Based on one crop year with wheat, all subsoiled plots outyielded the untreated check areas by a minimum of 6 bushels/acre. Subsoiling alone gave an average yield increase of 8 bu/ac; subsoiling with gypsum addition produced an average yield increase of 10 bu/ac; and subsoiling with limestone addition produced an average yield increase of 6 bu/ac. By comparison liming alone resulted in a small, probably nonsignificant, yield decrease of 1 bu/ac compared with the check areas.

The results suggest that the areas subjected to subsoiling experienced sufficient mechanical fracturing of the hardpan to allow improved water infiltration and retention, along with better root penetration by the crop. The combination treatment of subsoiling with gypsum showed a slight advantage in yield over subsoiling alone which suggests that the calcium contained in the gypsum had begun to replace and reduce the sodium levels in the soil. Ripping with limestone produced lower yields probably due to the lower solubility of limestone relative to gypsum.

It is intended that yield measurements and annual soil analyses will be made over at least the next five years.

Subject: Land Use

For Further Information Contact:

Regional Soils Specialist, Alberta Agriculture, Provincial Building, Box 7777, Fairview, Alberta, T0H 1L0; Phone: 835-2291

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

NON-RUMINANTS

Project Number: 83-F009-4

Project Title: Effect of the Medata Blowaway System on Piglet Mortality Due to Crushing

Co-operating Producer: Richard Scoffom

Location: Vilna

Project Co-ordinators: Grant Gillund, District Agriculturist, Smoky Lake and Phil Thacker, (former) Regional Swine Specialist, Vermilion

Objective: to evaluate a recently developed farrowing crate attachment to determine its effectiveness in reducing preweaning piglet mortality under commercial conditions on the Canadian Prairies.

Abstract:

Pregnant sows were randomly assigned to either an experimental or a control group. Medata Blowaway units were attached to the farrowing crates of the experimental group a minimum of three days before the sows gave birth and remained there until ten days after birth.

The blowaway unit sends a beam of light across the width of the farrowing crate. The beam passes just above the sow's back when she is lying down. When she stands, she breaks the beam which activates the blower. An air stream is directed under the sow's body, causing the piglets to retreat from the sow, thereby reducing their chances of being crushed. When the sow lies down, the blower goes off and the piglets return to suckle.

A total of 69 litters from crossbred sows (Large White x Landrace) of mixed parity were tested. At day 109 of gestation, sows were moved into farrowing crates in an environmentally controlled room maintained at 70°F.

Piglets farrowed in crates fitted with the blowaway unit moved away from the sow whenever the unit was activated. Even after the unit was removed, the piglets moved away from the sow when she stood. The sows in the experimental group crushed approximately half as many piglets as sows in the control group. However, deaths as a result of starvation, genetic defects and other causes were higher in crates equipped with the blowaway unit so total piglet mortality was similar for both groups.

This experiment was conducted under excellent management and environmental conditions and both groups had a preweaning mortality significantly below average. With a poorer environment and a lower level of management, it is possible that more piglets would be saved as a result of using the blowaway unit. However, under the conditions of this experiment, no beneficial effects were observed.

Subject: Non-Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, P.O. Box 70, Smoky Lake, Alberta, T0A 3C0; Phone: 656-3613

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

RUMINANTS

Project Number: 82-F001-2

Project Title: The Effect of Trace Mineral Supplementation on Calf Gains and Cow Breeding Performance

Co-operating Producer: Dave Lathwell

Location: Sundre

Project Co-ordinator: Donald Milligan, Regional Livestock Supervisor, Airdire

Objective: to assess the need to feed trace minerals to cows on pastures; and to demonstrate that feeding trace minerals resolves problems that have occurred in this area of known deficiencies in selenium and possible deficiencies in other trace minerals.

Abstract:

The study was based on 88 cows and calves divided into two groups. The first group, with 54 head, was assigned as a treatment group while the second group, 34 head, was used as a control. The control group received cobalt iodized salt and the treatment group received trace mineral fortified salt including zinc, copper, manganese, cobalt and selenium. The cattle were allowed a grazing period of 150 days.

Results indicated that trace minerals will increase calf weaning weights provided levels of copper and zinc are 0.25 and 0.75 percent respectively. Analysis indicated that the cost of the fortified salt would be recovered by a one pound weight gain. Since the extra gain of the treatment group was 12 pounds, the additional cost of the fortified salt was easily recovered. Therefore, the use of fortified salt in mineral-deficient areas is beneficial.

Subject: Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Box 250, Olds, Alberta, T0M 1P0; Phone: 556-4221

Donald Milligan, Regional Livestock Supervisor, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F002-2

Project Title: The Effect of Trace Mineral Supplementation on Calf Gains and Cow Breeding Performance

Co-operating Producer: James C. Hughes

Location: Longview

Project Co-ordinator: Donald Milligan, Regional Livestock Supervisor, Airdrie

Objective: to assess the need to feed trace minerals such as selenium, copper and zinc, to cows on native pastures; and to demonstrate that feeding these minerals reduces mineral deficiency problems that have occurred in the Longview area.

Abstract:

Longview is known to be deficient in selenium and is thought to be deficient in copper and zinc. Ranchers in the area have had long-standing mineral problems as exhibited by cattle chewing on wood, bones, etc.

A treated group of 350 range cows was compared to a control group of 100 two-year old, first calf heifers. The treated group was offered free choice 18:18 mineral and trace mineral fortified salt including zinc, copper, manganese, cobalt and selenium. The control group received free choice 18:18 mineral and cobalt-iodized salt.

Findings indicated that both groups experienced phosphorus shortages. The results also indicated that weight gains were increased by addition of trace minerals to cattle diets. Analysis indicated that the extra cost of fortified salt would be recovered by a less than one pound gain in weight of each individual cow or calf. Therefore, in areas of acute mineral deficiencies, supplementing diet with trace minerals is economically beneficial.

Subject: Ruminants

For Further Information Contact:

Donald Milligan, Regional Livestock Supervisor, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F003-2

Project Title: Preimmunization of Feeder Cattle

Co-operating Producer: Don J. Edge

Location: Airdrie

Project Co-ordinator: Donald Milligan, Regional Livestock Supervisor, Airdrie

Objective: to demonstrate the value of preimmunizing calves prior to sale.

Abstract:

Approximately 50 head of steer calves were given the following treatments: weaned at four months of age, dehorned and castrated, vaccinated with a 7-way vaccine to prevent clostridial diseases, vaccinated with Contravac for prevention of IBR/PI3, treated for warbles and optionally treated with Ralgro (a growth implant).

The preimmunized (PI) calves were sold at an auction for about the same price as other calves partly because it was not advertised that PI cattle were available. The buyer of the PI calves indicated that the PI calves appeared to perform better.

If there were proper advertising of the availability and benefits of PI calves at an auction, a better price would be paid for these because they would be less work for the buyer.

Subject: Ruminants

For Further Information Contact:

Donald Milligan, Regional Livestock Supervisor, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, TOM 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F004-2

Project Title: (A) Comparison of Weight Gains of Suckling Calves Implanted and Not Implanted with Ralgro and (B) Comparison of Weight Gains and Health Status of Weaned Calves in a Feedlot, Implanted Once and Twice with Growth Implants

Co-operating Producer: John Negropontes

Location: Red Deer River Ranches, Sundre

Project Co-ordinator: Donald Milligan, Regional Livestock Supervisor, Airdrie

Objective: to demonstrate the use of growth implants to improve weight gains in suckling calves; and to compare the use of one implant with the use of two implants.

Abstract:

There was a gain of six pounds to the advantage of Ralgro-implanted calves as compared to the non-implanted control group. This gain more than compensated for the cost of the implants.

The most effective implant procedure was to not implant at branding but to implant at weaning. This resulted in a significant increase in weight (an average of 24 pounds) for the cattle and a significant increase in income for the producer.

Subject: Ruminants

For Further Information Contact:

Donald Milligan, Regional Livestock Supervisor, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F004-2

Project Title: Alberta Certified Preconditioned Feeder Program: Calf Performance Trial

Co-operating Producer: Donald Petersen

Location: Sundre, NW-12-34-6-W5

Project Co-ordinator: Steve Archibald, District Agriculturist, Olds

Objective: to demonstrate the value of preconditioning calves in terms of economics and calf performance.

Abstract:

Calves were treated as per the Alberta Certified Feeder Cattle Program including vaccinations, dehorning, castration, warble treatment and ear tagging. Subjectively, the preconditioned calves were in better shape and wintered better than the control group.

Subject: Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 250, Olds, Alberta, T0M 1P0; Phone: 556-4221

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F009-2

Project Title: Beef Breeding Management by Heat Synchronization

Co-operating Producer: Pat Harvie

Location: Priddis

Project Co-ordinator: Donald N. Milligan, Regional Livestock Specialist, Airdrie

Objective: to evaluate potential for controlled breeding as a tool to shorten the breeding season, develop a more uniform calf crop and shorten the calving season.

Abstract:

A controlled breeding program was conducted by injecting Estrumate* at the start of breeding. Bulls to be used were tested by a veterinarian for breeding soundness and mating ability.

The female herd of 170 was split into four groups: one group each of heifers and young cows were injected with estrumate*, the other two were used as controls. Chin ball markers were used to detect heat and the cows were then exposed to the bull.

Estrumate* was shown to be most effective in young cows. Their calving season was cut by 33%, or 30 days, from the original 60-day season. While the injected heifers required the full 60-day season to complete calving, they had, on average, higher calving percentages in the interim periods than the untreated heifers and young cows. The importance of this is that heifers and cows had more time to recover from calving and to be rebred. Also, the calves were generally older and therefore slightly heavier at weaning. Because the calving period was shortened, the calves as a group were more even in terms of weight and size.

Subject: Ruminants

For Further Information Contact:

Regional Livestock Specialist, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F013-2

Project Title: Out-of-Season Breeding of Lactating Columbia, Suffolk-Columbia and Hampshire-Columbia Ewes

Co-operating Producers: May and John Lockhart

Location: Okotoks

Project Co-ordinator: Allen Toly, District Agriculturist, High River

Objective: to determine the effectiveness of estrus synchronization in lactating range-bred ewes for out-of-season lambing; and to evaluate a 3:1 winter wheat:barley annual cereal forage crop which was spring seeded on thin black soil as summer and fall grazing and as a feed source for nursing ewes.

Abstract:

A flock of 71 Columbia and cross-bred ewes that had lambed in January and February 1984 was divided into two groups on the basis of age and genetic structure. Both groups were treated with progestagen impreganted sponges in March and injected with PMSG in April. Four or five rams were then placed with each group of ewes.

The rams were very active and each ewe was serviced by at least two rams. More than 50% of the ewes lambed. The rate of lambs born to each ewe lambing was approximately 1.65 for the entire flock. Yearling ewes did not do very well.

Better use of ram power would be obtained if two rams were placed with 15 to 20 synchronized ewes for 48 hours rather than four or five rams with 30 to 40 ewes for five to seven days.

In conclusion, estrus synchronization does work in lactating range-bred ewes.

Subject: Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Building, Box 490, High River, Alberta, T0L 1B0; Phone: 652-3232

Donald Milligan, Regional Livestock Supervisor, and John Knapp, Regional Sheep Specialist, Alberta Agriculture, Airdrie Regional Office, Agriculture Centre, Bag Service #1, Airdrie, Alberta, T0M 0B0; Phone: 948-5101

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F009-3

Project Title: Effect of Bovaid and Ralgro Implants in Yearling Steers and Nursing Bull Calves

Co-operating Producer: Dave Carlyle

Location: Blackfalds

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Supervisor, Red Deer

Objective: to determine the effects of using growth implants and fly control tags on weight gains of yearlings and calves.

Abstract:

Eighty-six calves were in this 182-day trial to investigate the effect on calf gains of Ralgro implants and Bovaid eartags applied to the calf at two densities (1/3, 1/1). Gains were increased 10.2 percent by tagging calves 1/3 and 17.3 percent by tagging calves 1/1. Where calves were on the same pasture, gains were increased 3.8 percent by tagging. Ralgro increased gains 1.2 percent and reduced testicle weight 69.5 percent. Net returns were $30.22 for Bovaid (1/3), $50.40 for Bovaid (1/1), $1.98 for Ralgro, $33.30 for Bovaid (1/3) and Ralgro, and $53.38 for Bovaid (1/1) and Ralgro.

In a 186-day trial to test the effect of Bovaid (1 in 4) and implants on yearling holstein steers on pasture, there was no difference in gains between Bovaid tagged cattle and non-tagged cattle in the same pasture. Implanted cattle gained faster than the control group. There was no significant difference between Synovex and Ralgro. There was no significant interaction between Bovaid and implants.

Subject: Ruminants

For Further Information Contact:

Dwight Karren, Regional Livestock Supervisor, currently at Lethbridge Regional Office, Alberta Agriculture, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5106

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F010-3

Project Title: Effect of Growth Implants on the Growth and Sexual Development of Bull, Steer and Heifer Calves

Co-operating Producers: Stan and Ron Marcinek

Location: R.R. #1, Condor

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Supervisor, Lethbridge

Objective: to determine the effects of Ralgro on bull calf growth, of early or late castration in combination with Ralgro on steer calves, and of implants on the growth and sexual development of heifers.

Abstract:

The Ralgro implanted bulls had the best gain during the summer (0-84 days). However, the stress of castration set these calves back enough that the Ralgro implanted steers had the best overall gain.

Ralgro implants in bulls significantly reduce testicle size.

Subject: Ruminants

For Further Information Contact:

Dwight Karren, Regional Livestock Supervisor, currently at Lethbridge Regional Office, Alberta Agriculture, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5106

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F011-3

Project Title: The Effect of Trace Minerals on the Growth of Suckling Calves and the Reponse to Ralgro Implants in Bull Calves

Co-operating Producers: Gordon Young and Hugh and Don Halladay

Location: Leslieville

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Specialist, Red Deer

Objective: to determine the effect of trace minerals and Ralgro implants on weight gains in calves.

Abstract:

The trial was run over two consecutive pasture seasons (1981 and 1982) on 226 calves. In 1981 two producers co-operated; in 1982 only one producer co-operated. All animals used in these trials were nursing crossbred calves. In June, cow and calf pairs were randomly assigned to pasture-mineral groups. Trace mineral and salt groups were maintained on separate pastures. One-half of the calves on each pasture were randomly implanted with Ralgro. Salt and mineral consumption by pasture was recorded over the pasture seasons. Calves were individually weighed at the beginning and at the conclusion of the trial.

Calves on pastures where trace mineral supplements were available gained 2.9% less than calves on pasture where salt was available. The difference was too small to suggest any real differences between salt and trace mineral supplements. Since salt-mineral groups were maintained on seperate pastures, differences in pastures such as forage quality and availability may have hidden any real differences between mineral groups.

Ralgro-implanted calves gained 0.21 lb/day more than non-implanted calves. This was a 9.0% improvement. Over a projected 122-day pasture season, this difference would have resulted in a 25.6 lb heavier calf.

The implant/mineral interaction could not be determined because of the effect of pasture differences in the trials. An economic analysis was done showing the net return to Ralgro implants was $16.70/calf.

The results from these trials suggest that there is a real economic advantage to implanting nursing calves with Ralgro. However, a better experimental design would be necessary to determine the benefits of trace minerals.

Subject: Ruminants

For Further Information Contact:

Regional Livestock Specialist, Alberta Agriculture, Red Deer Regional Office, Provincial Building, 3rd Floor, 4920 - 51 Street, Red Deer, Alberta, T4N 6K8; Phone: 340-5334

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta T6H 5T6; Phone: 427-1956

Project Number: 83-F006-3

Project Title: Vicogen Trial

Co-operating Producers: Ron and Stan Marcinek

Location: R.R.#1, Condor

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Supervisor, Red Deer

Objective: to determine the effectiveness of Vicogen vaccinations in the prevention of scours (diarrhea) in calves.

Abstract:

Coliform scours have caused severe losses in a number of cow-calf operations. A herd with a history of severe scours was used in a two-year trial to determine the effectiveness of the scours vaccine "Vicogen". The herd was randomly divided in half. One group received the recommended two shots of Vicogen at 6 weeks and 3 weeks prior to calving. The other group was not treated. The Vicogen-treated and control cattle were mixed and managed as one herd. Through the two years of the trial no major outbreaks of coliform scours occurred.

There were no significant differences in the number of occurrences of scours or the severity of scours between the treated and control group. The producer felt, however, that the Vicogen treatment made sick calves respond faster to treatment with less dehydration. Calves from heifers treated with Vicogen appeared to be stronger and to do better.

Subject: Ruminants

For Further Information Contact:

Dwight Karren, Regional Livestock Supervisor, currently at Lethbridge Regional Office, Alberta Agriculture, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5106

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F010-3

Project Title: Ralgro at Birth and Bovaid on Calves

Co-operating Producer: Gordon Young

Location: Leslieville

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Supervisor, Red Deer

Objective: to evaluate the use of Ralgro at birth on calves with a reimplant at 60 days; and to evaluate the insecticide Bovaid on a dilution effect comparison.

Abstract:

Sixty crossbred calves were used in the trial. Half of the males were implanted at birth and at 60 days, half at 60 days only; half of the females were implanted at 60 days and half were not implanted. Every third calf was tagged with Bovaid without regard to sex.

The Ralgro implant caused no response in the male calves in the first sixty days; single-implanted male calves outgained double-implanted calves. Heifers showed no response to Ralgro. Horn fly populations were too small for the Bovaid tags to have an effect on any calves.

Subject: Ruminants

For Further Information Contact:

Dwight Karren, Regional Livestock Supervisor, currently at Lethbridge Regional Office, Alberta Agriculture, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5106

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F012-3

Project Title: Effects of Synovex and Ralgro on Suckling Calves

Co-operating Producers: Dave Carlyle and Stan and Ron Marcinek

Location: Blackfalds and Leslieville

Project Co-ordinators: Brian Harris, (former) Regional Livestock Specialist, Red Deer and Dwight Karren, (former) Regional Livestock Specialist, Red Deer

Objective: to evaluate the effects of Ralgro and Synovex implants on growth and testicle development in suckling calves in two trials.

Abstract:

The effects of Ralgro and Synovex implants on growth and testicle development in suckling calves were evaluated for a total of 405 calves on two co-operating farms over two years. In both trials, the effects on calf gains of the implants and the sex of the calf were found to be independent of each other.

In the first trial, calves implanted with Ralgro gained 6.0% faster and male calves gained 7.2 to 7.8% faster than heifers. There was no difference in the gains of early and late castrates.

In the second trial, Synovex-implanted calves gained 6.6% faster than controls; Ralgro-implanted calves were intermediate. Bulls gained faster than heifers.

Implanting calves three times over the suckling and wintering period increased gains 4.6 to 7.3% over non-implanted controls and tended to increase gains from 0.9 to 3.7% over calves implanted once at the start of the wintering period. Previous implants did not reduce the response to subsequent ones.

Over both trials, testicle weights of bulls were reduced by 45.2 to 65.9% with Ralgro and by 77.1% with Synovex-S.

It was concluded from these trials that implanting calves increased gains and net returns of implanted calves and reduced testicle weights of implanted bull calves. There was no difference in male calf performance due to time of castration provided that sufficient time was allowed after castration for the calf to overcome the effects of castration.

Subject: Ruminants

For Further Information Contact:

Regional Livestock Specialist, Alberta Agriculture, Red Deer Regional Office, Provincial Building, 3rd Floor, 4920 - 51 Street, Red Deer, Alberta, T4N 6K8; Phone: 340-5334

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F014-3

Project Title: Bovaid and Debantic Insecticide Ear Tags on Cow-Calf Operations

Co-operating Producer: Arthur Ziegler

Location: Stettler

Project Co-ordinator: Glen Werner, District Agriculturist, Stettler

Objective: to evaluate Debantic (chlorvinphos) insecticide ear tags as compared to Bovaid (fenvalerate) ear tags and to a control group with no ear tags.

Abstract:

In this trial 150 cow-calf pairs were split into three replicate groups. Two calves in eight received ear tags (one Bovaid and one Debantic). Each of the 3 groups was grazed on native pasture.

There was no statistically significant difference between the gains of insecticide tagged cattle and the controls. There was a significant difference in calf gains between the three replicate groups indicating the importance of variability in pastures.

Insecticide ear tags had been used for the two years previous to the demonstration which significantly decreased the fly population in the test area. The small total number of flies is probably the reason for no significant difference in gains between the controls and the two tagged groups.

Subject: Ruminants

For Further Information Contact:

District Agriculturist, Alberta Agriculture, Provincial Bldg., Bag 600, Stettler, Alberta, T0C 2L0; Phone: 742-4481

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F019-3

Project Title: Effect of Ralgro and Synovex Implants on the Growth of Suckling Calves and the Testicle Development of Bull Calves

Co-operating Producers: Stan and Ron Marcinek

Location: R.R. #1, Condor

Project Co-ordinator: Dwight Karren, (former) Regional Livestock Supervisor, Red Deer

Objective: to examine the effect of Ralgro and Synovex on the growth of suckling calves and the sexual development of bull calves.

Abstract:

The effect of Ralgro and Synovex implants on growth and testicle development in suckling calves was evaluated in a total of 405 calves on 2 co-operating farms over two years. In both trials, the effects of implants and sex of the calf on calf gains were found to be independent of one another. In the first trial, calves implanted with Ralgro gained 6 percent faster than non-implanted calves and male calves gained 7.2 to 7.8 percent faster than heifers. There was no difference in the gain of early (June) and late castrates (October to November).

In the second trial, Synovex-implanted calves gained 6.6 percent faster than the non-implanted controls. The Ralgro-implanted calves tended to gain faster than the controls but slower than the Synovex-implanted calves. Bulls gained faster than heifers.

Implanting calves three times over the suckling and wintering period increased gains 4.6 to 7.3 percent over gains of the controls and tended to increase gains 0.9 to 3.7 percent over calves implanted once at the start of the wintering period. In this project, previous implants did not reduce the response to subsequent implants.

Subject: Ruminants

For Further Information Contact:

Dwight Karren, Regional Livestock Supervisor, currently at Lethbridge Regional Office, Alberta Agriculture, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5106

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F002-5

Project Title: Late Summer Pasture and Grain versus Feedlot for Finishing Yearling Heifers

Co-operating Producer: Murray Holt

Location: Sangudo

Project Co-ordinator: Lloyd Giebelhaus, District Agriculturist, Sangudo

Objective: to determine a least-cost method of maximizing weight gain by comparing supplemental feeding in late summer with placing cattle directly into a feedlot.

Abstract:

This trial showed that: 1) The pasture-feedlot regime was an effective method of extending the grazing season, starting heifers onto feed and economically producing beef. 2) The feedlot-feedlot heifers gained a significant 0.42 lb/day more but the cost per pound gain was higher (0.47¢ vs 0.45¢) than the pasture-feedlot heifers. 3) The pasture-feedlot regime potentially netted an extra $3.03/head return over the feedlot-feedlot regime. 4) The feedlot-feedlot heifers were on feed an average 76.9 days compared to 85.4 days for the pasture-feedlot heifers. Thus, the pasture-feedlot regime allowed heifers to be marketed sooner. 5) The pasture-feedlot regime marketed four heifers directly off grass-grain, two of which were graded A1 and two graded B1. 6) Based on carcass data of heifers sold on November 24 and December 16, the heifers could have been marketed 10 to 14 days earlier and still graded A1. 7) The heifers wintered at a lower winter gain (owner #1) experienced compensatory growth on pasture the subsequent summer so that by September 9 there was only a 41 pound difference in average weight between owner #1 heifers and owner #2 heifers compared to a June 4 difference of 145 pounds. 8) The pasture-feedlot heifers had a period of compensatory growth after being removed from pasture and placed in the feedlot. 9) If the steer-heifer price spread widens on a seasonal basis, heifers should be marketed earlier in the season. That would mean placing heifers in the feedlot sooner or starting supplemental grain feeding on grass sooner. 10) The pasture-feedlot regime has the following advantages: a) during a wet fall cattle spend less time in a muddy feedlot, b) reduced investment in feedlot facilities or in the spreading of manure, c) extended grazing season, and d) utilization of grain that may not be marketable in other ways.

Subject: Ruminants

For Further Information Contact:

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Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F017-5

Project Title: Recycling of Dairy Cattle Wastes

Co-operating Producer: Gordon Fraser

Location: SE-10-25-60-W4, Westlock

Project Co-ordinators: Rick Bjorge, District Agriculturist, Westlock and Rob Hand, Regional Livestock Specialist, Barrhead

Objective: to measure the economic benefit and practicality of including dairy cattle wastes in feeder cattle rations; and to measure the difference in average daily gain, average daily feed intake and feed-to-gain ratio between control cattle and those fed dairy wastes.

Abstract:

Ninety-nine feeder cull cows were purchased and divided into two groups. The trial lasted 69 days.

The waste-fed cows consumed approximately 7.2 lbs of dairy manure daily over the trial period. On a dry matter basis this is only 1.1 lbs daily. At higher levels of waste, the cull cows reduced feed intake. The sloppier waste seemed to decrease feed intake so lower moisture content waste was used, thus demonstrating that it is not economically justifiable to feed liquid 'sloppy' dairy manure. It was observed that the waste-fed cows would wait three or four hours for their silage-grain-manure ration to air out before they began feeding.

Ten of the 99 cows that began this test were pregnant and calved within the test period. Of these, six were from the control group and four were from the waste-fed group. It also should be noted that two cows died out of 50 in the control group while six of the 49 waste-fed cows died. The higher death loss for the waste-fed group and the results of the veterinary examination indicate that certain cows did not adjust to the waste in the ration. These cows lost body condition and died.

Weight gains were lower than anticipated for both groups. The level of grain, poor quality silage, and number of calvings probably influenced weight gain. The waste-fed cows gained slightly less than the control cows.

Since there is social unacceptance to feeding waste back to cattle, any financial gain derived from feeding waste could be more than offset by losses in sales.

Subject: Ruminants

For Further Information Contact:

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Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 84-F003-5

Project Title: Feeding Liquid Whey to Lactating Dairy Cattle

Co-operating Producer: J. Allam

Location: NE¼-28-53-22-W4, Ardrossan

Project Co-ordinator: David E. Ward, District Agriculturist, Sherwood Park

Objective: to determine the feasibility of feeding liquid whey to dairy cattle with respect to milk production, consumption of hay, grain and silage, body weight changes and manure production.

Abstract:

Warm liquid acid whey was fed to 125 milking Holstein cows, 60 dry cows and 50 heifers and steers for 143 days between May 8 and September 27, 1984. Steers and heifers continued to have access to whey for an additional 14 days.

A total of five feeding stations of varying capacities were established to make the whey available to the various classes of dairy cattle. All cattle readily consumed the whey to the point of crowding around the feeding stations on sighting the delivery truck.

It was anticipated that sufficient data would be gathered to determine whether or not the nutrient composition of whey would contribute to reducing consumption of hay, grain and forage silage. In addition, it was anticipated that sufficient data would be gathered to determine the effect of whey on body weight and other related observations. However, Allam Farms Limited is an extensive operation and seasonal work pressures made it difficult to fine-tune the data gathered.

The data showed that whey contributed an increase of about one liter per cow per day in milk production. It appeared that less feed was fed particularly from the grain portion of the ration. The use of whey reduced water purchases. Heifers and steers adapted well to the whey, and readily consumed it. Heifers were more easily noticed coming into heat with "more aggressive" heat periods.

The project uncovered some problem areas including the intensive time requirement of unloading, the costs associated with trucking a high volume product with a low cost per unit volume and the need for a centralized storage (and distribution) tank.

In conclusion, feeding warm liquid acid whey to dairy cattle results in no detrimental effects on either milk production or body weight and probably reduces feed costs. A much more controlled project is required to fully determine the costs and benefits.

Subject: Ruminants

For Further Information Contact:

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SPECIAL CROPS

Project Number: 82-F009-1

Project Title: Proper Inoculation of Pulse Crops

Co-operating Producers: Pulse Growers Association of Alberta

Location: six farms in Southern Alberta

Project Co-ordinator: Blair Roth, Special Crops Specialist, Lethbridge

Objective: to field test inoculation of dry beans, dry peas, green beans and lentils in Southern Alberta.

Abstract:

In on-farm studies carried out in 1982, 1983 and 1984, on dry beans, peas and lentils, the following conclusions were obtained: i) physiological stress affects proper nodulation; ii) applied rhizobia are generally more active than indigenous soil rhizobia; iii) inoculant powder applied dry always results in poor nodulation; iv) sticker applied powder is equal to granular inoculants in nodulation effectiveness; v) proper nodulation cannot always be measured in increased yields; and vi) granular inoculants are not economical for narrow row crops.

Results from the 1983 and 1984 tests have proven that under variable field conditions proper nodulation did not always occur even after using accepted methods of inoculation.

The 1984 program emphasized the use of a slurry system for applying the inoculant and powder to the pulse seed in a labor saving manner. The slurry is a mix of a commercial sticker (Nutrigum), peat-based inoculant powder and water. Conclusions from the 1984 work were: i) the slurry system of inoculation using an auger and a drip applicator can effectively and rapidly inoculate pulse seeds; ii) decreasing the amount of nitrogen applied reduces the opportunity for disease problems (white mold), particularly in pea crops; iii) dry beans are not efficient nitrogen fixers and because of this they show a response to nitrogen applications; iv) selecting for rhizobia/strain variety specificity could improve dry bean inoculation.

The future for proper inoculant application, particularly for narrow inter-row crops, lies with the slurry application technology since it can offer speed of application, very low labor requirements and yet maintain good seed/inoculant adhesion.

Subject: Special Crops

For Further Information Contact:

Blair Roth, Regional Special Crops Specialist, Alberta Agriculture, Lethbridge Regional Office, Agriculture Centre, Lethbridge, Alberta, T1J 4C7; Phone: 381-5127

Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Bldg., 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 82-F002-4

Project Title: Evaluation of Cultural Practices used to Extend the Growing Season, Increase Productivity and Improve the Quality of Vegetables

Co-operating Producers: Robert and Bernice Grey

Location: Fort McMurray

Project Co-ordinator: Harvey Yoder, District Agriculturist, Lac La Biche

Objective: to compare a number of cultural practices for growing fruits and vegetables in northeastern Alberta.

Abstract:

Various techniques were used to grow cucumbers, peas, beans, lettuce, carrots, strawberries and corn.

Cucumbers Combinations of several techniques were compared over three years: black plastic mulch, clear plastic mulch, clear plastic tunnels mounted over the rows, trickle irrigation, greenhouse, and control. The tunnels protected the plants from frost and the plants grown in the tunnels produced higher yields than other plants grown outside. Greenhouse plants produced the highest yields but also cost the most to produce. Generally, the tunnel/black mulch/irrigation combination produced the best profit margin. Cucumber transplants worked better than seeds because the more mature transplants could take better advantage of the long June days.

Strawberries Strawberries were grown only in Year 3. Four treatments were compared: irrigation, irrigation/black plastic mulch, black plastic mulch, and control. Yields from those with the mulch were highest and were about twice as high as the control yields.

Lettuce, Beans, Carrots and Peas Trickle irrigation was compared to controls for all these crops. Generally, irrigation improved yields.

Corn Seneca Horizon, Sunny Vee and Northern Vee varieties were grown in Year 3. Northern Vee did not produce well. The following treatments were compared: plastic mulch, plastic mulch/tunnels, plastic mulch/tunnels/irrigation, and control. The mulch/tunnels/irrigation combination produced the best yields and it appeared that the returns on the corn adequately compensated for the extra costs.

Generally, trickle irrigation improved the quality and yields of the produce. It is a simple technique and requires a smaller volume of water than some other methods. Tunnels and mulches were very beneficial.

Subject: Special Crops

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Research Division, Alberta Agriculture, Room 206, J.G. O'Donoghue Building, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6; Phone: 427-1956

Project Number: 83-F007-4

Project Title: Feasibility of Wild Rice Production in Northeastern Alberta

Co-operating Producer: Thomas Lambert (Northen Alberta Wild Rice Growers Association)

Location: several lakes north of Lac La Biche

Project Co-ordinator: Harvey Yoder, District Agriculturist, Lac La Biche

Objective: to determine the feasibility of wild rice production on a number of lakes north of Lac La Biche.

Abstract:

Wild rice was seeded in approximately 25 lakes in northeastern Alberta. The rice was sown along lakeshores in water from six inches to five feet deep. All the lakes had beds of soft-textured sediments such as silts and clays. Lakes were selected with various levels of water turbidity. The rice was sown in the fall just before freeze-up at a suggested rate of 15 lbs/acre. The seed was sown by hand from small boats and canoes, by cyclone seeders from airplanes, and by cyclone seeders from large boats.

Wild rice was harvested from five of the 25 lakes that were seeded. Production ranged from a high of 130 pounds per acre to approximately 40 pounds per acre. On 10 lakes the rice established but not sufficiently to harvest. On six lakes there was no establishment of wild rice. On two lakes stands were established but were then destroyed by wind and ducks.

Above normal rainfall which raised the levels of most lakes and above normal winds adversely affected the establishment and production of wild rice.

Results suggest that wild rice can be grown in northeastern Alberta. Water depths between two and three feet are most desirable. A good flow of water through the lake is required to maintain a good level of dissolved oxygen. Rapid or large water fluctuations can be harmful to wild rice. The greatest production came from lakes with a pH of 6.5 or less. Excessive turbidy can be harmful. Wild rice does best on soft, fine sediments with well decomposed organic matter. Water lilies were troublesome weeds, competing with the rice for sunlight. Some problems were encountered with the cyclone seeders.

A slide kit on wild rice production is available from the Northern Alberta Wild Rice Growers' Association.

Subject: Special Crops

For Further Information Contact:

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